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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,693	03/30/2001	Robert J. O'Donnell	015290-509	5643
7590	10/24/2003		EXAMINER	
Peter K. Skiff BURNS, DOANE, SWECKER & MATHIS, L.L.P. P.O. Box 1404 Alexandria, VA 22313-1404			KACKAR, RAM N	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/820,693	Applicant(s) O'DONNELL ET AL.	
	Examiner Ram N Kackar	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11, 14, 16-19, 24-29 and 31-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 14, 16-19, 24-29 and 31-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Applicant's cancellation of withdrawn claims 1-10 and 20-23 is acknowledged.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 36 recites a polymer substrate while claim 34 on which this claim depends recites a ceramic substrate

#### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11, 14-19 and 24-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuomiko Itou (JP 10004083) in view of Ravi Rungta (US 5362335) and Bamberg et al (US5721057).

Yuomiko Itou disclose Cerium oxide coating on the inside of a plasma chamber, clamp ring or shield ring etc (Abstract) but does not disclose the parts having aluminum over which

Art Unit: 1763

cerium oxide layer is disposed. Yuomiko Itou teaches that the parts could also be made of an oxide of ceramic (Abstract)

Ravi Rungta discloses corrosion-resistant barrier coating of one or more types of cerium oxide on aluminum alloy and teaches that the corrosion resistance is superior to that of aluminum oxide (Abstract, Col 1 lines 23 to Col 2 line 32 and Col 3 line 41). Ravi Rungta teaches that other rare earth oxides of lanthanum, yttrium and scandium also provide corrosion resistant coatings.

Yuomiko Itou or Ravi Rungta do not disclose cerium oxide film thickness.

Bamberg et al disclose Cerium oxide containing coating of metal parts exposed to high temperature and gases (Col 1 lines 8-22, line 64, Col 2 lines 1-8, 54-55 and example 1,2 and 4). The layer thickness is disclosed to be 0.4 mm (Col 3 lines 27-28).

Since, plasma chambers and many other parts used in semiconductor manufacturing are frequently made of aluminum or aluminum oxide and may also have anodized coating for corrosion resistance, it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating on the inside of the chamber or other process chamber parts to have better corrosion resistance.

6. Claims 11, 14, 16-19, 24-29 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al (US 6447636) in view of Han et al (US6123791) and in view of Yuomiko Itou (JP 10004083).

Qian et al disclose parts of a plasma process chamber for semiconductor manufacturing made of aluminum or ceramic like aluminum oxide combined with an oxide of Group IIIB metal like cerium (Col 2 lines 34-40 and Col 6 lines 2-53).

Qian et al do not disclose relative proportion of aluminum oxide to Group III element oxide.

However actual proportion may be optimized according to performance versus cost. Han et al disclose a process kit for semiconductor manufacturing (Col 1 lines 2-20 and Col 2 lines 1-55) having a composition of aluminum oxide ceramic and Group III oxide and disclose that the proportion could be 70% (Col 2 lines 41-55).

Regarding cerium oxide as a coating or bulk part, it is obvious that the anticorrosive property would be provided by both. Therefore it is obvious that the combination could be either a coating or a bulk part of ceramic containing Group IIIB metal oxide.

Yuomiko Itou teaches that the part could be a film or a compound (Abstract).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a cerium oxide coating or cerium oxide as a component of the ceramic for improvement of anti erosion properties.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Basil et al (US 4799963).

Basil et al disclose cerium oxide based coating over polymer substrate (Abstract and Col 2 lines 16-20).

Therefore cerium oxide coating on polymer substrate would have been obvious at the time of the invention.

This claim is provisionally rejected in view of rejection under 35 U.S.C. 112, second paragraph also, assuming that the applicant is claiming cerium oxide containing coating on a polymer substrate instead of a metal or ceramic substrate.

***Response to Amendment***

Applicant's arguments filed 9/5/2003 have been fully considered but they are not persuasive.

Applicant arguments regarding no disclosure of proportion of ceramic oxide and layer versus bulk part have been noted and where they are presented in the already disclosed prior art is indicated in the rejections.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

Application/Control Number: 09/820,693


Page 6

Art Unit: 1763

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700